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Small Farms

Research News

USDA, ARS, SPA

Spring 2001 1st Edition

Pine Straw and Nuts

Pine Straw Harvesting: What is known and What needs to be known

Research related to management practices for pine straw production has been a part of the Center's agroforestry project since its inception about 10 years. Agroforestry is combining the production of an agricultural product with that of wood/timber. In this case, the agricultural product is the pine needles collected as a straw. Agroforestry is further sub-divided into five general practices. Pine straw harvesting is included under the forest farming component. In forest farming, the forest understory is left largely intact to produce a non-wood product.

There continues to be a strong interest in pine straw harvesting and the production of colored pine straw material, subjects of investigation by researchers at the Center in the past. The center receives more inquiries regarding these two subjects than any other components of the agroforestry project. In the past year, the Center has received two requests for someone to speak to farmers, extension agents, etc. on pine straw harvesting. The researchers who initiated the pine straw research at the Center, Drs. Catalino Blanche and Henry Pearson, are gone now. The program is being continued by Drs. Dan Pote and Dave Burner but in new areas of investigation. These new research efforts are not quite at a point for public presentations. Therefore, I have become the "resident" spokesperson for previous accomplishments. This article is based on the presentations that I have been giving on this topic during the last year.

Why the interest in pine needle harvesting? Pine needles (also called pine straw) make an excellent mulch. The needles are slow to decay, of low cost, easy to spread, and have an appearance that is appealing to many people. Pine

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September 11th Brings Changes to the Center

Many changes in the operation of federal work sites are occurring in the response to the terrorist attacks on the World Center Trade and Pentagon on September 11, 2001. The Center is no exception. Security measures to protect federally owned assets and federal workers are being increased. The threat potential to the Center located in a rural community in western AR is low and probably has not changed since September 11th. However, these enhanced security measures are being dictated from the highest level of the federal government and are being applied to all federally owned buildings and properties without exceptions.

Changes in security measures at the Center should not be interpreted as a change in our desire to be available and interact with the public. The Center remains strongly committed to serving Arkansas and American agriculture, and the public in general. We are asking your patience with us as we seek a balance between security and public access. I can not over-emphasize the Center's desire to welcome all visitors, whether new or old friends, and the Center's commitment to public service.

straw, where available, is widely used as mulch around horticultural plants for both residential and commercial buildings and around nursery plants. Pine straw also has applications in preventing soil erosion near road and building construction sites. In these instances, the pine straw is usually left in its baled form. There are some novel uses for pine straw that currently use only a small portion of the needles harvested. These include use as a building material and as an energy source. Burning the needles from a typical acre of pines can produce about 10 million Calories of heat.

Pine straw can be incorporated into the management protocol of a pine stand whether one is managing for timber or only for pine straw. It is not uncommon in NC and GA where the pine straw industry is well established for trees to be managed strictly for needle production. In other parts of the country, a landowner may want to manage pine trees for multiple products. In AR, early in the rotation/life of a pine tree stand, the alleys between trees could be managed for crop or hay production. Once the tree canopy shades much of the understory, pine needle can be harvested until there is a commercial thinning for pulp wood. Usually for a few years after a commercial thinning, needle production is not sufficient for economically viable straw harvests. There is a possibility that after such a thinning the understory could be managed first for hay production, then hay and needle harvests, and ultimately for needles and saw logs. Management of a pine stand for multiple products after thinning is an area of investigation that the Center is just starting.

For pine straw production, not all pines work well. The trees need to produce a needle that is long enough to form bales. Longleaf probably makes the best needles for baling. Slash and loblolly needles can also be harvested. However, shortleaf pines will not work. Therefore, pine needle production is going to be limited mainly to the southeast USA where loblolly, slash, and longleaf pines grow.

Tree density is an important aspect of managing pines for straw harvests. There are two considerations regarding tree density: needle yield and harvesting equipment. From a yield standpoint, the relationship is simple: for trees older than 5 to 8 years of age, needle production is directly related to basal area. Basal area is the area of an acre occupied by tree trunks. Early in the life of a pine

stand, tree density is going to be directly related to basal area. For this reason in NC and SC, the recommended planting density for pine needle harvests is rows 10 feet apart and 5 to 7 feet between trees in each row, approximately 700 to 800 trees per acre. One of the positive attributes of pine needle harvesting is that conventional haying equipment can be used to bale needles. The problem with planting trees in 10-foot rows is that by the time the trees are 10 to 15 years old it may be impossible to get regular hay equipment between the tree rows. Our experience to date suggests that 12-foot rows may be better if one plans to use regular haying equipment. Today, there are vendors producing rakes and balers specifically for pine needle harvests. The main difference between the equipment for hay and pine straw is their width. Equipment produced specifically for pine straw harvest is narrower so it can get between tree rows. A strategy for a landowner in today's market place may be to plant trees in a 10-12 foot row, use existing baling equipment for needle harvests early in the operation, and use the proceeds from these early harvest to finance the purchase of pine straw specific baling equipment for later harvests.

Another consideration in managing pines for straw production is when to harvest needles. Most needles drop in the fall. Drought may cause needles to fall during the late summer or earlier in the autumn. Most often needles are harvested in the winter after freezing temperatures. Harvesting in the winter is often a convenient time because it does not conflict with other farm operations

How many consecutive years can needle harvest occur? Research data indicate that harvesting needles will decrease tree growth for the three succeeding years. For this reason, cooperative extension service in many southern states recommend that needles be harvested only infrequently. For example, the recommendation in FL is to harvest 20% of the fallen needles every 4 years. Why does needle removal decrease tree growth? The answer is not totally known. Fallen needles are important to the recycling nutrients in a pine plantation. Therefore many researchers believe that the decline in tree growth following straw harvest is related to a decrease in available nutrients. Typically, newly fallen needles contain about 30 pounds of N and 5 pounds of P per acre. An experiment recently concluded by the Center

addresses the question whether or not tree growth can be maintained after needle harvest if nutrients are replaced by fertilization. Results from this experiment are forthcoming in the near future. This experiment also assessed the vulnerability of the soil to erosion by rainfall when needles are removed. Both landowners and natural resource professionals have voiced concerns related to this potential problem. Information on the erosion potential of soil after needle harvest has not been assessed in the past.

As in almost any tree production scheme, good weed control is of great importance for pine straw production. Consumers want a pine straw production that is free of contaminants. Therefore, the ground should be clear of weeds, twigs and cones. To get a wood lot ready for pine straw harvests, a controlled burn 2 years prior to harvesting may be necessary. Herbicide treatment of the understory may be necessary the year prior to and the year of needle harvest. In most instances a broad band non-selective herbicide like Round-up @ is recommended. Continual herbicide treatment may be necessary since pine needle removal usually stimulates weed growth in the understory.

At least three different methods of harvesting pine needles are used throughout the southern United States. The only real requirement for harvesting is that the needles be dry. Hand harvesting of needles is still practiced today. In most instances, the days of hand baling needles are gone. In most hand harvesting operations, needles are hand raked into piles and fed into a square baler. A crew of three can bale about 250 to 300 bales per day. Raking the needles into windrows with farm equipment and then feeding the collected needles into the baler will increase the speed of the operation by 3 to 10-fold. Specialized pine needle equipment will increase harvesting another 2 to 3-fold. If you are interested in the availability of specialized pine straw equipment, I would suggest searching the internet using key words like pine straw, pine needles.

As in the production of any agricultural commodity today, marketing of pine straw is the key to a successful operation. Typical pine straw yields are 100 to 300 bales per acre. The target size for a bale of pine straw is 25 to 30 pounds. This size is convenient for use by a typical

homeowner/gardener. Typical prices in the retail market are \$8 to \$15 per bale. Success in the retail pine straw market is dependent on location; how close are you to people who want the product. The wholesale market offers the producers a greater degree of flexible in terms of proximity to users, etc. Typical prices are \$3 to \$4 per bale. Most producers operating in the retail market have the ability to deliver 300 to 1500 bales to a consumer within a 400-mile radius in 24 hours.

Pine straw production may be an appealing alternative crop for some landowners. The technology and information is available to assist interested landowners interested in growing this product. The success of pine straw operation will depend in most instances on the production of a competitive, high quality product and its delivery to consumers.

For further information contact David Brauer, David Burner, Dan Pote, or Billy Moore



Eastern Black Walnut: An Industry in Change

Introduction: Two years ago the agroforestry research project began experiments to assess the growth, nut production and economics of eastern black walnuts. The objectives of the this article is to provide: 1) the rationale for the Center's interest in this topic; 2) an overview of current production techniques in the "greater Missouri" region; and 3) experiments currently being conducted by the Center in this area. A lot of the information in this article was gathered from nut growers while traveling in Missouri and adjoining states this past October and November. I want to thank the staff of the University of Missouri Agroforestry Center who put us in contact with most of these growers.

A Changing Industry. Eastern Black Walnuts are found throughout the United States east of the Great Plains. Nuts from these trees have been used by people since prehistoric times. Currently there is one processor of Eastern Black Walnuts, Hammond Products, Inc. in Stockton, MO. Hammond's processes walnuts into nut meat and shell material which has industrial uses. Currently Hammond's has the capacity to process between 40 and 60 million pounds of walnuts annually. Most of the walnuts that Hammond's processes come from wild

walnut trees. Nuts from wild trees yield a relatively low percentage of nut meat, usually only 5 to 10 % of the weight of a nut is extractable meat. To collect these nuts, in the fall Hammond's currently establishes a couple of hundred buying stations from Kansas east to Virginia. At these buying stations, the nuts are hulled (i.e. the fleshy external green to black material is removed), bagged, and weighed, and the sellers are paid. The collection system needs to be fairly extensive to insure that enough nuts are bought to meet the company's obligations. However, approximately one out of four years not enough nuts are bought by Hammond's to meet its capacity to process.

In the last 30 years, Hammond's has envisioned an industry that is different from the one that exists today: landowners growing Eastern Black Walnuts specifically for nut production under orchard like conditions, and producing a nut that yields relatively high percent of meat. The benefit for Hammond's would be that a reliable supply of nuts from a smaller geographic area utilizing fewer buying stations. The benefit to the landowner would be that nuts with higher yields of meat would receive a premium price. There is growing evidence there are a number of named varieties of Eastern Black Walnuts that produce nuts which yield 20 to 40% meat when processed. Research that has been conducted over the last twenty years at Hammond's Neo-Shuff Research Farm indicates that there are varieties of Eastern Black Walnut and management practices to produce high yields of high quality nuts. The Center recognized that if growing Eastern Black Walnuts for nut production was going to be a viable option for landowners research trials of varieties and management practices would have to be conducted over a wide set of environment conditions from Missouri-Arkansas east to middle Tennessee. This need for more site-specific recommendations for growing walnuts has become the Center's rationale for emphasizing agroforestry systems and management practices that include Eastern Black Walnuts.

Walnut Production in the greater Missouri region. As stated earlier, during October and November of 2001, Dr. Ares, a Research Associate in the agroforestry research project, and I visited over a dozen nut-growers in Missouri, southern Iowa, eastern Nebraska and eastern Kansas. The following is a brief summary of the cultural practices

currently being used by these landowners. The intent of this section is to provide an idea of the scope of various management protocols being used, rather than defining a set of best management practices. Most of the landowners that we visited were growing walnuts for nut production. Less than a third of the landowners were growing the trees for timber. The trunks of Eastern Black Walnut can produce a highly valuable timber product. This section will focus primarily on management practices used to produce nuts. Practices that defer between timber and nut production will be noted.

What types of Eastern Black Walnuts are being grown? For timber, most landowners planted nuts or seedlings from state nurseries. For nut production, most landowners were using named varieties. Named varieties of Eastern Black Walnut have existed over 100 years with Thomas being the first. In fact, most of the varieties being used today were developed at least 40 years ago. About half the farms using named varieties planted either seedlings or nuts obtained from certified sources. The other half of the landowners initially planted either native seedlings or nuts obtained from a state nursery. These nuts or seedlings were planted at relatively high density. After a few years, poor growing trees were removed and the shoots of named varieties were grafted onto the native rootstock. Grafting was done before the trunks were greater than 3 to 4 inches in diameter. This system of grafting in the field allows one to select trees with rootstocks that are adapted to one's environmental conditions. The time from planting to grafting can be varied by management protocols like weed control and fertilizer application. The disadvantage of this in-field grafting system is that one must have skill in grafting trees.

How far apart are walnut trees planted? Ideally a productive acre of Eastern Black Walnuts for nut or timber production will have 30 to 40 mature trees (>15 years old). This number of trees per acres translates into a spacing of about 35 feet between trees in every direction. However, such spacing may not be right for everyone. We saw a stand of 20 year-old walnut trees that were highly productive nut producers on 25 x 25 foot spacing. Harvesting of nuts earlier in the tree's life is more efficient and practical on a closer spacing. However, some of these trees will need to be removed in the next ten years to prevent a decrease in productivity

resulting from the trees competing with each other. We saw at least two farms where the landowner was practicing alley cropping with their walnuts. In alley cropping the land between tree rows is cropped, for example a grain corn/soybeans/wheat rotation. In such alley cropping systems, the distance per row may need to be 40 to 60 feet to accommodate equipment while the distance between trees within a row may be only 20 feet.

Another consideration in terms of planting density is whether or not trees are being purchased and planted as part of a Conservation Reserve Program (CRP) contract. CRP has been used in many areas to establish vegetative (grass) buffer strips and waterways. However, CRP can also be used to establish trees. CRP provides landowners with funds to establish trees in terms of a cost share. The amount of the cost varies from state to state and often from county to county. Trees established as part of CRP need to be maintained for the life of the CRP contract, a minimum of 10 years. In most states, trees planted as part of a CRP contract have to be planted on a maximum spacing of 12 x 12 feet, approximately 300 trees per acre. This spacing is far too many walnut trees for productive stand for either nut or timber production. However, combining planting trees under CRP with the in-field grafting system during the contract period and a radical thinning operation at the end of the contract may be a management option for certain landowners in certain locales. For details on CRP contracts in your area, contact your local Natural Resource Conservation Service (NRCS)/USDA field office. Many of the newer plantings of walnuts (past 10 years) that we visited were established under CRP contracts.

Good weed control is **the key** to a productive stand of Eastern Black Walnuts. The importance of weed control can be over-emphasized. In most instances, productive walnuts have an area below the trees that is devoid of competing vegetation. For young trees, this is particularly true. Young trees should have a circular area extending out from the trunk at least 3 to 4 feet with minimal vegetation. The traditional way of controlling weeds beneath walnuts is to use a non-selective broad spectrum herbicide like Roundup® at least three times a year: 1) in the spring just prior to bud break; 2) beginning of summer; and 3) in the fall as cool season grasses begin rapid growth.

In older trees (greater than 10 years-old) vegetation control within the drip line of the trees during the summer is of greater importance than year round weed control. One interesting concept for weed control that we saw was the use of cheat grass as a cover. Cheat grass grows as a winter annual and thus does not compete with the trees for water during the summer. Cheat grass that is killed just after seed set will provide a mulch cover to suppress summer weed growth. Similar management practices using either annual bluegrass, annual ryegrass, or red-top could be developed for areas in which cheat grass is not adapted or not present in the seed bank in the soil.

Another key component to the establishment of hardwood trees like walnuts in many parts of the United States today is protecting young trees from deer. Deer can damage trees by browsing the terminal bud or injuring the trunk by rubbing. One way to prevent deer is to install a plastic cylinder around the tree to the height of 3 to 4 feet. These protectors can do a good job of preventing deer damage, however, other problems may occur with their use. The cylinder may attract rodents during the winter and these rodents can damage the base of trunk. At the Center, these plastic cylinder did a good job of preventing deer damage during the first winter and we observed no damage due to rodents. However, almost all of the leaves within the cylinder became scorched and died after the first day that the air temperatures exceed 95° F. Because of the severity of leaf scorch, the protectors were removed. During the winter we observed little or no damage due to deer rubbing or browsing. This absence of deer damage probably results from the low deer population at the Center. Protectors fashioned from T-posts and chicken coop wire also can protect trees from deer while not creating habitat for rodents. However, weed control must be done within the protector and is more difficult because of its presence. Effective weed control around trees should decrease damage from deer. Tall grass and weeds near the young trees can provide habitat for deer to bed. The proximity of the deer to the trees can then encourage damage from browsing and/or rubbing.

Plant nutrient management is also critical for productive walnut trees. Walnuts will grow poorly on soils of low fertility. Walnuts need soil test levels for pH, K and P that are similar to that for corn or

soybean production. Walnuts also need a fair amount of nitrogen. Two or three applications of nitrogen for at least a total of 100 pounds of N per acre is recommended. Walnuts prefer well-drained soils but need a fair amount of water during the growing season. Therefore, site selection for planting walnuts is critical productive trees. River bottoms are often ideal locations for walnuts.

The biggest difference in management between walnuts grown for timber and those for nuts is pruning. Trees being managed for timber will be pruned to produce a trunk of 9 or 17 feet in length with little or no knots from branches. Trees being grown for nuts do not need such extensive pruning, in fact some landowners prune little if any. Pruning nut trees so that there are no branches below 6 feet is a good idea to facilitate mechanical harvesting of nuts and ease of managing the understory.

Currently walnuts on a good site produce enough nuts for an economically viable harvest after about ten years. With improved varieties and better management practices, producers hope that this time interval between planting and nut harvests can be shortened to 5 to 7 years. Walnut trees typically require a minimum of 40 years, and more often, 50 to 70 years to produce a high quality timber trunk.

Up until recently harvesting black walnuts was rather labor intensive. A tree shaker mounted to the PTO of a tractor could be used to encourage nut drop. In most cases nuts on the ground were picked by hand. Some growers are now using pecan sweepers that have been altered to pick up walnut nuts. Larger growers and those selling nuts retail will hull the nuts either in the field or on farm. Good nuts are then separated from bad ones, which float in water. Nuts are then washed and allowed to dry prior to processing.

Marketing options for walnut trees are more plentiful than one might think. Marketing timber requires having enough trees to be of interest to a logger. In many cases, marketing walnut timbers seems to be a hit or miss opportunity. One always hears stories of the person being offered \$10,000 for three walnut trees in their front yard. I am not sure how realistic such offers are. No matter, good quality saw logs from a hardwood tree like Eastern Black Walnut will always have a market. For named varieties of Eastern Black Walnut, several marketing

options are available. First, nurseries buy nuts and possibly scion wood to produce their trees. Of course, the nuts can be sold for food for humans, and believe it or not, wildlife. Hammond's will buy nuts for premium price if nuts are of superior quality. However, the price one gets from Hammond's is far less than that of selling nut meat retail. Selling nut meat in the retail market, either by internet, farmer market or even in grocery stores, requires considerable processing involving nut cracking and then separating shell from meat. This processing either requires expensive equipment or is labor intensive. As in most agricultural ventures today, the person who adds value to the products by processing the commodity to be a form more like that bought by the consumer captures a greater portion of the products' value.

What is the income potential of an acre of black walnuts? The grower we visited who sells most of his walnuts as nut meat in the retail market, my guess is that his **income** is between \$1,000 and \$1,500 per acre. This is not profitable. This operation requires sophisticated cracking and cleaning equipment that I'm unsure of the cost and how to depreciate it over the equipment's life time. A productive acre of walnuts may produce \$100 to \$200 of nuts when sold as a commodity with little or no premium for quality. An increase in income of 2 to 3 fold would not be unreasonable if the nuts were sold to Hammond's for a premium price.

This is a fair quick summation of cultural practices being used today by landowners in the "greater Missouri" region. If you are interested in additional information on how to grow Eastern Black Walnuts, please contact us or the Center for the Advancement of American Black Walnuts. The Center for the Advancement of American Black Walnuts produces a handbook describing in detail cultural practices for walnuts. Contact information is provided at the end of the newsletter.

Current Research Projects. A variety trial of named Eastern Black Walnut varieties was established two years ago in December 1999, at the eastern edge of the Center's farm. The objective of this experiment is to evaluate the growth and nut production of 8 named varieties of Eastern Black Walnuts. Booneville, AR is probably near the southern edge of Eastern Black Walnuts' native range. In addition, the Center does not have the

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deep well-drained soils that Eastern Black Walnuts prefer. Because of the hot dry summers in Booneville and the lack of soils capable of holding a lot of water, these trees are being drip-irrigated. They were established in rows 40 feet apart and 25 feet between trees in the rows. The 40-foot alleys between tree rows are being managed for high quality bermudagrass hay. The planting was established with one year-old grafted trees from a commercial nursery averaging about 2.0 to 2.5 feet in height. Along the way we have learned what not to do in many instances, especially with regards to using protectors to minimize deer browsing and irrigation regimes. Despite learning some hard lessons, four of the eight varieties now average over 5 feet height with some trees approaching 9 feet in height. If you are interested in seeing an intensively managed walnut stand, please stop by and I would be happy to show it to you. Just this past month, a similar trial was established an hour drive north of Nashville, TN at the University of Tennessee's Highland Rim Experiment Station. NRCS and Tennessee State University are cooperators in the experiment at the Highland Rim Station. Plans are being made to establish two more trials in northern middle Tennessee in cooperation with Tennessee State University located in Nashville, TN.

Several years ago, the Center in cooperation with NRCS/USDA embarked on a project to develop a model that would predict the economic returns from various agroforestry practices. To facilitate development of the model, an existing model being used in New Zealand was adapted for use in the United States. Agroforestry systems in New Zealand tend to be the co-production of pine trees for timber and cool-season forages for lamb and beef production. Agroforestry systems in the United States are far more diverse, including many different agroforestry practices, tree species, and understory crops. To get data on tree growth and thus economics of the agroforestry systems, it was decided to use data generated from the U.S. Forest Service. This tree growth data was gathered from the trees growing in native stands. The other major research project involving Eastern Black Walnuts at the Center is to determine whether the data from the U.S. Forest Service is a good estimate of walnut growth in agroforestry systems. To accomplish this objective, we are collecting data on tree growth from existing plantings, using a combination of previously published data and data collected from landowner

fields. I would like to thank landowners who have participated in this project so far. The data has just been collected and analysis yet to begin. I will update you at a later date as to the findings of this project.

For further information, contact David Brauer



Center to Hire a New Scientist

Later this spring the Center will be fully staffed in terms of scientists for the first time since 1997. Dr. Mike Looper will join the staff as a Research Animal Scientist. Mike's research will boost the Center's activities regarding beef production. Mike grew up in Greenwood, AR where his family still operates a beef and dairy operation. Please welcome Mike to our staff and wish him the best in his new job.

Future Newsletter Themes:

Spring 2002- Soil and soil fertility research

Summer 2002- Agroforestry

Fall 2002- Farmer Participatory Research

Winter 2002- Livestock research

Dale Bumpers Small Farms Research Center is a partnership among three institutions:

ARS- conducts research related to livestock production and agroforestry; ARS staff can be reached at 501-675-3834.

PMC/NRCS- evaluation of vegetation and vegetation technology to retain soil and its productive capability; NRCS staff can be reached at 501-675-5182.

Division of Agriculture / University of Arkansas- dissemination of agricultural information. Extension Specialist, Billy Moore, can be reached at 501-675-5585.

ARS scientists at DBSFRC and their primary research focus:

David Brauer- Agronomist/Research Leader investigating both agroforestry and livestock production

Glen Aiken- Agronomist investigating production practices for stockers

Adrian Ares- Forester working on tree growth and physiology in agroforestry systems

David Burner- Agronomist investigating crop production in agroforestry systems

Joan Burke- Animal Scientist investigating reproductive performance in cattle and production practices for hair sheep

Dan Pote- Soil Scientist investigating the effects of management practices on sediment and nutrient retention in agroforestry and livestock production systems.

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Organizations promoting agriculture in the Ozark Region

The information below is not an exhaustive list of organizations trying to help farmers and ranchers in the Ozarks. If your organization is interested in being included, please contact David Brauer.

Poultry Production and Product Safety Research Unit (PPPSRU)/ARS/USDA/Center of Excellence for Poultry Science is located on the campus of the University of Arkansas in Fayetteville. PPPSRU conducts research to solve problems related to: 1) diseases and physiological disorders that are of economic important to the poultry industry; and 2) land application of waste from the poultry production. PPPSRU can be reached at 501-575-4202 or on the world wide web at www.uark.edu/~usdaars/.

South Central Agricultural Research laboratory (SCARL)/ARS/USDA conducts multi-disciplinary research for developing technologies to establish and sustain production and post harvest quality of alternative crops such as vegetables, small fruits, and kenaf. The Laboratory is co-located with the Oklahoma State University's Wes Watkins Research and Extension Center in Lane, OK. SCARL can be reached by phone at 580-889-7395 or on the world wide web at www.lane-ag.org.

Shirley Community Development Corporation (SCDC) is a community-based organization formed to plan and initiate short- and long-term development programs for Shirley, AR

and the surrounding communities. These programs focus on economic development, educational enhancement, youth job training, and service projects that improve and strengthen the community. SCDC is involved in projects that research and demonstrate the skills and techniques needed for production and marketing of specialty agricultural crops. The present focus is on log-grown Shiitake mushrooms. SCDC operates the Shiitake Mushroom Center as a training center. Recent additions include on-site production of garden bricks and stepping stones, raised bed herbal plots, twin wall polycarbonate greenhouse, and compost demonstration project. SCDC can be reached by phone at (501) 723-4443 or on the web at <http://www.shiitakecenter.com/index.html>.

The Kerr Center for Sustainable Agriculture in Poteau, OK offers leadership and educational programs to those interested in making farming and ranching environmentally friendly, socially equitable, and economically viable. The Kerr Center can be reached by phone at 918-647-9123, by email at mailbox@kerrcenter.com or on the web at www.kerrcenter.com.

ATTRA, Appropriate Technology Transfer for Rural Areas, is the national sustainable agriculture information center. ATTRA provides technical assistance to farmers, Extension agents, market gardeners, agricultural researchers, and other ag professionals. ATTRA is located in Fayetteville, AR. ATTRA staff members prefer to receive requests for information at 800-346-9140. ATTRA maintains a web site at www.attra.org

The Good Grazer Group (GGG) is a network of livestock producers mainly from northwest Arkansas but includes producers from many other states including Virginia, Missouri, and Oklahoma. GGG maintains a electronic mailing list on which members routinely share information and opinions regarding various topics on forage management and livestock production. Members meet monthly, usually at a member's farm, to see and discuss information related to grazing practices. Individuals interested in joining the GGG should contact Ann Wells at annw@ncatark.uark.edu.

The Center for Advancement of American Black Walnut is a non-profit organization promoting the planting of an improved variety of eastern black

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walnut for nut production. For more information contact the Center's Director, Jim Jones, at P. O. Box 600, Stockton, MO 65785, 417-276-6010 (voice), 417-276-6011 (fax), or jonesctr@hotmail.com (e-mail).

Information regarding the **Arkansas Cooperative Extension Service and the Division of Agriculture** can be found on the internet at the following web site: www.uaex.edu.

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Attention

Are you interested in a person to speak at a meeting of your civic or agricultural group? If so, please contact David Brauer at 501-675-3834 to see if we can match your interests/needs to the expertise of the Center's staff.

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If you did not receive this newsletter by mail and would like to do so, please contact the Center and we will place you on our mailing list.

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Upcoming Events

February 16, 2002: Tour of facilities by attendees of the Arkansas FFA Alumni meeting in Booneville, AR that weekend.

February 28, 2002: Regional FFA Field Day to be held at the Center and South Logan County Fairgrounds.

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